CURRENT LITERATURE

In the *Educational Review* for November Professor H. M. Richards, of Barnard College, discusses Botany in the College Course. Since lack of space prevents reprinting the entire article, the following brief notes are presented. After mentioning the early emphasis on classification and terminology and the present common idea that "there is nothing of general importance or of compelling interest in the study of plants," Professor Richards points out that "the pendulum has, perhaps, swung a little too far away from what has been called the "knowing of plants." So much so that students sometimes complain that their "course in botany has not given them enough opportunity to learn the names of plants, thus placing the less experienced teacher in somewhat of a quandary as to whether it be better that the student be instructed in the fundamental principles of plant structure and behavior or that he simply be enabled to name the individual plants which may be seen in his walks abroad. There is, however, no doubt as to which is preferable from the standpoint of training and general education, and botanical teachers are to-day universally agreed that it is the principles which should be taught as affording the student a comprehensive outlook over a branch of knowledge which is in reality of the first importance to the human race. Ability to name the flowers is an interesting accomplishment for the amateur, but as a mere avocation it is not a pursuit which in itself often leads to any great intellectual advance for the student, and may degenerate into an occupation scarcely of more intrinsic value than the collecting of postage stamps."

This paper, however, was written to show what botany is capable of as a means of scientific discipline. "For the very reason that botany is no longer merely the study of gross morphology largely expressed in terms of classification, there is less ease than there used to be in delimiting it sharply from other sciences,—not the least indeed of its advantages, educationally speaking. Formerly there was commonly understood to be a fairly clear distinction between the exact experimental sciences, like physics and chemistry, and the purely observational ones

like botany and zoölogy, at least as they were taught. Now, however, the great increase in the development of the experimental side, which in its last analysis leads to the provinces of chemistry and physics, makes botany for instructional purposes, as well as for itself, a science in which pure observation is greatly tempered by experiment. Such a combination is a peculiarly fortunate one, and it is just here that botany presents practical educational advantages over almost any other science. We have, then, the possibility of training students in direct observation from natural objects in conjunction with observation of experimental phenomena from which conclusions may be drawn more or less indirectly."

Important also is the ability to see things as they are without prejudgment or prejudice. While the value is the same in training in any kind of clear thinking, *e. g.*, mathematics or botany, the laboratory makes its own addition to the value of a science like botany. There the student comes in actual contact with the living material. "He learns in the beginning that each line that he draws has its meaning and that no careless slipshod sketch can represent with accuracy the object before him. He then further finds that sins of omission are equally fatal to accurate representation as sins of commission. He must recognize the naked truth. It is not the question of his own or any one else's opinion whether a certain appearance is or is not as he thinks he has observed it, but it is a question of fact, and he is forced to appeal to the object itself for his answer. Another point of advantage is the segregation of the student in the laboratory, since he is thereby forced to do his own work and his own thinking. It is the fault of the instructor if he is helped too much or is allowed to be prejudiced by drawings or descriptions of the objects studied. It was this spirit which imbued the teaching of the elder Agassiz, and which, in a modified form, is still recognized as an important principle of the best instruction. Of course, like all things good in themselves, the practice of making the student work for himself can be overdone, for it is impossible for the ontogeny of the mental development of an individual to recapitulate *in toto* the phylogeny of the develop-

ment of a science. And if it were not impossible, certainly it would be absurd. It is for the instructor to make sure that the student does not waste his time and energy in floundering among problems that his experience could not enable him to solve, and at the same time to bear in mind that it is not simply information which the student needs. Even the best scholar will think he sees what he is told to see, be his instructor a book or a person, and if informed before he has made an attempt to investigate for himself, he gains no power to overcome difficulties in observation. In other words, it is the increase in power of a previously untrained faculty which makes this instruction, if properly carried out, profitable in the broadest sense. It is not to be supposed that the particular observational problems presented to him in the laboratory will ever face the individual in the outside world; in all probability they will not; but the necessity of independent observation and of drawing conclusions therefrom certainly may face him, and he can meet them more successfully if his mind and his eye are habituated to work coördinately. Preëminently in the laboratory is this training afforded; a slow process, perhaps, and an expensive one, too, educationally considered, but more than worth the cost both in time and energy."

Such work "resolves itself fundamentally into seeing things as they are, interpreting the observations by the simplest processes of clear thinking, and finally recording both the object itself and the conclusions drawn from it, with strict honesty. The net result is clear seeing, clear thinking, and a clear conscience." Emphasizing the common sense fact that the problems should be carefully chosen, lying within the range of possible interest yet never narrowed into a tiresome repetition of endeavor, the author passes to a "lesser though entirely legitimate purpose, namely, the increasing of the pleasurable appreciation of the things of the world, and consequently the enlargement of the ability for rational enjoyment of life." The stimulus botany offers to the imagination, "one of the most valuable assets of an individual in determining his success for himself and his value to the community."

In a college course the sub-divisions of botany have various undisputed utilitarian values from the informational view point. The contribution of botany to medicine lies not only in its relation to bacteriology, but in the suggestive field of plant physiology. Recognizing that a certain amount of botanical fact must of course be presented in one way or another to the student, the author insists that the "relation of the science to other fields of knowledge should be accentuated, whether it be to the obviously allied one of zoölogy or to the more remote one of economics, for the ramifications of a subject like botany are so many and so far-reaching that it touches upon many lines."

After indicating appropriate types of work for the several college years, the author closes with the opinion that "in both a purely pedagogical and informational sense, botany and zoölogy rank equally with physics and chemistry in suitability for a required science option in the college course."—J. B.

The American Breeder's Magazine, vol. II, no. 3, contains a syllabus of "Suggestive Laboratory Exercises for a Course in Plant Breeding," prepared by Prof. Arthur Gilbert of the Laboratory of Experimental Plant Breeding at Cornell University.

Twenty-five exercises are submitted covering such studies as: variations in common plants; morphology of flowers; technique and practice in cross pollination; behavior of hybrids of oats, wheat and citrus; critical examination of cytological preparations showing nuclear division, chromosomes, pollen mother cells, etc., and special consideration of corn as to behavior of hybrids, xenia, correlation of characters, judging and ear to row tests.

The appearance of this outline is timely. Plant Breeding is destined to take an important place in botanical instruction. The arrangement of an adequate course of laboratory instruction in this subject presents more complications than do most biological branches.

The exercises as presented are of spceial interest as they come from a laboratory which has been a pioneer in teaching the subject of Plant Breeding.—A. B. S.

The Toxicity of Certain Mushrooms of the Genus *Amanita* is a short but important paper by Radais and Sartory in the *Rev. Scien. du Bourbonnais*, etc., **24**: 97–8. In view of the serious aspect of mushroom poisoning this last fall in our vicinity this warning seems to be applicable here as well as in Europe. During the week of September 9, 1911, at least *twenty-two* persons lost their lives and many more were made seriously ill by mushrooms in the vicinity of New York. A translation of this French article follows.

"The autumn of 1911 has brought the usual outbreak of mushroom poisoning, with many fatal cases, caused primarily by eating *Amanita phalloides* Fr. The press considered that it was doing a useful thing in spreading among the people, with the authority of naturalists whose intentions were more laudable than their knowledge, the incorrect and dangerous notion that in treating the mushrooms with boiling water followed by repeated washing in cold water, all danger in eating them had been removed. For a long time mycologists have recognized that this treatment will often remove certain very soluble bitter and poisonous principles but they have never ceased to put people on their guard against the inefficiency of this method in the case of certain species, especially *Amanita phalloides*. The present seems to be an opportune time to confirm this caution with experiments. Our observations were made upon several poisonous species but with special reference to *A. phalloides*. We may sum up the results of our experiments in the following words: *A. phalloides* still preserves its toxic principle unchanged after being heated to boiling for some time; in the dried state its toxicity is not weakened after standing a year nor has it lost its poisonous properties after remaining dry for six years; the poison is still held in the tissues of the mushroom after boiling with water.

"*Therefore it is very unwise to spread broadcast the erroneous idea that all poisonous mushrooms may be rendered harmless by boiling with water and then washing repeatedly in cold water.*" —E. D. C.

ENGELMANN, WILHELM: Jubiläums Katalog der Verlagsbuchhandlung Wilhelm Engelmann in Leipzig, 1911, pages 447. This beautiful example of the printer's art gives photographic reproductions of letters to the firm, buildings and members of the firm from 1811 to 1911. It is mainly interesting to the botanist because the Wilhelm Engelmann establishment has been instrumental in the printing of numerous botanical works beginning with Grisebach and ending with Engler. Wilhelm Engelmann is the publisher of "Die natürlichen Pflanzenfamilien," "Die Vegetation der Erde" and "Das Pflanzenreich." The Jubiläums Katalog gives a complete statement of the contents of all these works and thus becomes of value to bibliographers. It commemorates the centenary of this German publishing house.—JOHN W. HARSHBERGER.

A portrait of Charles Mason Hovey with a short sketch of his life has appeared in a recent number of The American Breeders Magazine (vol. II, no. 3). Special mention is made of his important contribution to horticulture in developing the first pistillate strawberry placed upon the market in America and from which practically all the present commercial varieties were derived, and of his success as an editor, author, plant breeder, nurseryman and merchant. He was born in Massachusetts in 1810 and lived in his native state until his death in 1887.—A. B. S.

A new text-book of microbiology,* such as the present one, is a useful compendium consisting of chapters written by a number of specialists, who have, under the editorial supervision of Charles E. Marshall, provided the fundamental and guiding principles which are basic to an interpretation of such subjects as air impurities, water supplies, sewage disposal, soils, dairying, fermentation industries, food preservation and decomposition, manufacture of biological products, transmission of disease, susceptibility and immunity, sanitation, and control of infectious or contagious diseases.

* *Marshall, Charles E.* (Editor), and other Contributors:—Microbiology for Agricultural and Domestic Science Students. (Pages i–xxi + 1–724. Philadelphia. P. Blakiston's Son & Co.)

The plan of a text-book in microbiology, which seeks to furnish basic principles, must assume a definite and systematic arrangement. With this in view, the text, amply illustrated with figures, has been divided into three parts: Morphological and Cultural, or that which deals with lower forms of life and methods of handling; Physiological, or that which deals strictly with functions; Applied, or that which reaches into the application of the facts developed to the problems met in the study of professional or practical affairs of agriculture, or domestic science.—JOHN W. HARSHBERGER.

NEWS ITEMS

We learn from *Science* that under the auspices of the Geographical Society of Philadelphia, a botanic and geographic expedition is to be made this summer to southern Florida by Professor John W. Harshberger, of the University of Pennsylvania. Professor Harshberger has made two previous trips to Florida and this expedition is to complete his studies in the Everglades region of the extreme southern part of the peninsula. The itinerary will be approximately as follows: Making Fort Meyers on the west coast headquarters, Professor Harshberger will first investigate the region in that vicinity; visits will be made to several of the islands along the gulf coast; the Caloosahatche will be ascended by power boat to Lake Okeechobee and the flora of that inland lake will be studied. Then the attempt will be made (if the drainage canal has been sufficiently constructed) to cross the Everglades to Fort Lauderdale on the east coast. As no botanical geographer has ever crossed the Everglades, unusual opportunities will be presented to study a region of great scientific interest. Photographs will be taken of the vegetation, the region will be mapped botanically, and a collection of the more interesting plants will be made. An abstract of the results of this expedition will be published in the October number of the *Bulletin* of the Geographical Society of Philadelphia.

The United States Forest Service has prepared a traveling exhibit of photographs for circulation among schools and libraries. It is sent free of expense, except of course transportation charges